Tab. 2. F. *A Spider hanging on the Branch of a Tree, with its Head turned againſt the Wind, and ſpinning out its Thread, 'till it finds that it adheres to ſome Body, (as to the Wall here repreſented) by which kind of Bridge it paſſes over Rivers*, &c.

G. *A Spider having broke the firſt Thread, by which it hung, and let out ſeveral others, is carried by the Wind, and floats in the Air with its Legs extended.*

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## II. *An Account of the Moon's Eclipſe*, February 2. 170$^{2}_{1}$. *obſerved at* Streatham *near* London, *and compared with the Calculation. By the Rev. Mr* H. Creſſener, *M. A. Fellow of the Royal Society.*

IN the laſt Lunar Eclipſe, on the ſecond of *February* 1709-10. the time of the end (which was what alone the want of a proper *Apparatus* and a favourable Skie would give me leave exactly to determine) I found to be the ſame (with but a very inconſiderable Difference) which the Calculation, according to our moſt Learned *Preſidents* admirable Theory, promis'd me to expect.

There being therefore no Examples of any Calculation (that I know of) according to that Theory, nor of the Theory's Agreement with Obſervation yet made Publick; I thought it proper to offer this one to this Learned Society's Peruſal, that the exact conſent with Obſervation in this, may prompt ſome of them to try the like in others. I have added the Calculation from the famous Mr. *Flamſteed*'s Tables, according to *Horrox*'s Theory,

Theory, as I find them publiſh'd in the Ingenious Mr. *Whiſton*'s Aſtronomical Lectures, with the *Radix*'s of the Mean Motions, corrected according to their firſt Authors later Obſervations, which are the ſame with thoſe aſſum'd in Sir *Iſaac Newton*'s Theory,

By comparing theſe two Calculations we may obſerve, that tho' moſt of the additional Equations in Sir *Iſaac Newton*'s Theory be very ſmall in this Situation of the Moon, yet they all conſpire ſo as to make its Place conſiderably more agreeable to Obſervation, than thoſe of *Horrox*'s Syſtem.

The Obſervation was made at *Streatham*, about ſix Miles near direct South of *London*, with a very good Eight foot Teleſcope. To correct the Clock, (for want of an Inſtrument,) I carried with me next Day two Watches, that were before adjuſted to the Clock, and compar'd them with Mr. *Flamſteed*'s at the Royal Obſervatory, having firſt noted its Error by an Obſervation of the Sun's Tranſit of the Meridian his Aſſiſtant communicated to me: Upon my return, I found my Watches ſtill to agree together, and to my Clock, which prov'd them to have gone true, and gave me the exact Error of my Clock, and the true time at Obſervation.

Mr. *Flamſteed* has ſince been pleaſed to acquaint me, that by his Obſervation of the Meridional Tranſit of the *Lyons Heart* during the Eclipſe, his Clock needed a yet further Correction of one Minute, which I have here accounted for.

| 17$\frac{09}{10}$. *Feb.* | *D.* | *H.* | *M.* | *Sec.* |
|---|---|---|---|---|
| The Mean Time of the Mean Oppoſition | 2 | 4 | 9 | 42 |
| The Mean Time of the True Oppoſition | 2 | 10 | 54 | 48 |
| At which the True Place of the Sun is | 10 | 24 | 55 | 50 |
| And its Æquation to be added. | | | | |

*The*

## *The Place of the Moon at this Time, from Sir* Iſaac Newton's *Theory.*

| | *S.* | *D.* | ′ | ″ |
|---|---|---|---|---|
| Mean Motion of the Moon | 4 | 26 | 57 | 37 |
| Annual Æquation Subtr. | | | 8 | 34 |
| The Correct Mean Motion | 4 | 26 | 49 | 03 |
| Mean Motion of Apog. | 11 | 18 | 13 | 54 |
| Annual Æquation of Apog. Ad. | | | 14 | 31 |
| Correct Mean Motion of Apog. | 11 | 18 | 28 | 25 |
| Second Æq. from the diſt. of Ap. from Sun Ad. | | | 2 | 57 |
| Place of the Moon the 2d time Æquat. | 4 | 26 | 52 | 00 |
| Mean Motion of Node | 11 | 01 | 34 | 25 |
| Æquation of Node Subt. | | | 06 | 54 |
| Correct Mean Motion of Node | 11 | 01 | 27 | 31 |
| The 3d Æquat. of the Moon from Nodes Aſpect with the Sun Subt. | | | | 10 |
| Place of the Moon the 3d time Æquated | 4 | 26 | 51 | 50 |
| Second Æquation of Apog. Subtr. | | 7 | 45 | 41 |
| True Place of Apog. | 11 | 10 | 42 | 44 |
| Mean Anomaly | 05 | 16 | 09 | 06 |
| Æquation of Center Sub. | | 1 | 53 | 31 |
| Moons Place the 4th time Æquated | 4 | 24 | 58 | 19 |
| The Variation. Ad. | | | | 11 |
| Moons Place the 5th time Æquated | 4 | 24 | 58 | 30 |
| The 6th Æquation from the diſtance of the Luminaries and Apog. Ad. | | | 1 | 20 |
| Moons Place 6th time Æquated | 4 | 24 | 59 | 50 |
| The 7th Æquation Ad. | | | | 34 |
| True place of the Moon in its Orbit | 4 | 25 | 00 | 24 |
| True Place of the Sun | 10 | 24 | 55 | 50 |
| Moon beyond the Oppoſition | | | 4 | 34 |
| Which divided by the Horary Motion of Moon from Sun gives | | | 7 | 42 |
| | *D.* | *H.* | | |
| The Mean Time therefore of Oppoſit. *Feb.* | 2 | 10 | 47 | 06 |
| And the true Time | 2 | 10 | 32 | 20 |

*The*

## *The Place of the Moon at the ſame time from the Tables in Mr.* Whiſton's *Aſtronomy, according to* Horrox's *Theory.*

| | | | | |
|---|---|---|---|---|
| Mean Motion of the Moon | 4 | 26 | 57 | 37 |
| Phyſical Parts Sub. | | | 8 | 21 |
| Correct Mean Motion | 4 | 26 | 49 | 16 |
| Mean Motion of Apog. | 11 | 18 | 13 | 54 |
| Æquation of Apog. Sub. | | 7 | 25 | 00 |
| Mean Anomaly | 5 | 16 | 00 | 22 |
| Æquation of the Center Sub. | | 1 | 53 | 53 |
| Place of Moon in its Orbit | 4 | 24 | 55 | 23 |
| Diſtance from the Oppoſition | | | | 27 |
| That is in time to be added | | | | 45½ |
| | *D.* | *H.* | | |
| The Mean time therefore of true Oppoſition is exactly | 2 | 10 | 55 | 33 |
| The Apparent time | 2 | 10 | 40 | 41 |
| Place of Moon in Ecliptick | 4 | 24 | 57 | 27 |
| Reduction between the true Oppoſition and middle of Eclipſe Ad. | | | 2 | 47 |
| | *D.* | *H.* | | |
| Middle of Eclipſe | 2 | 10 | 43 | 34 |
| Continuance of Eclipſe | | 2 | 55 | 06 |
| Digits Eclips'd | | 9 | 55 | |
| Beginning of Eclipſe | 2 | 9 | 16 | 01 |
| End of Eclipſe | | 12 | 11 | 07 |
| End of Eclipſe by the Moons Place from Sir *Iſaac Newton*'s Theory. | | 12 | 02 | 00 |
| End by Obſervation | | 12 | 01 | 30 |
| End by Calculation from *Horrox*'s Theory | | 12 | 11 | 08 |

The Error therefore of Sir *Iſaac Newton*'s Theory is by this Obſervation but half a Minute, or none; of *Horrox*'s Syſtem, Nine Minutes and a half.